94. A crystalline single phase composition exhibiting zero electrical resistance at a temperature of 70°K or above, having the formula $LM_2Cu_3O_{6+d}$, wherein "L" is Sc, Y, La, Ce, Pr, Nd, Sm, Eu, Gd, Tb, Dy, Ho, Er, Tm, Yb, Lu, or mixtures thereof; "M" is Ba, Sr or mixtures thereof; and (d) has a value from 0.1 to about 4.5 and is a value that provides the composition with zero electrical resistance at a temperature of 70°K or above.

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Please amend claims 16, 20, 24, 26, 29, 35, 47, 56, 61, 63, 65, 66, 78, 82 and 88 as follows:

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16. (Once Amended) A method for conducting an electrical current within a conductor material without electrical resistive losses, comprising the steps of:

utilizing as the conductor material a metal oxide complex of the formula

$$[L_{1-x}M_x]_aA_bO_y$$

wherein "L" is scandium, yttrium, lanthanum, cerium, praseodymium, neodymium, samarium, europium, gadolinium, terbium, dysprosium, holmium, erbium, thulium, ytterbium, lutetium, or a combination thereof; "M" is barium, strontium, calcium, magnesium, mercury, or a combination thereof, provided that when "L" is lanthanum "M" is not barium; "A" is copper, bismuth, titanium, tungsten, zirconium, tantalum, niobium, vanadium or a combination thereof; "x" is from about 0.01 to about 1.0; "a" is 1 to 2; "b" is 1; and "y" is a value from about 2 to about 4 that provides the metal oxide complex with zero electrical resistance at a temperature of 40°K or above;

C 2 Cont

cooling said metal oxide complex to a temperature at or below that at which said metal oxide complex becomes superconductive; and

initiating a flow of electrical current within said metal oxide complex while maintaining said metal oxide complex at or below the temperature at which it becomes superconductive.

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20. (Once Amended) A method for conducting an electrical current within a conductor material without electrical resistive losses, comprising the steps of:

utilizing as the conductor material a metal oxide complex of the formula

$$[L_{1-x}M_x]_aA_bO_y$$

wherein "L" is scandium, yttrium, lanthanum, cerium, praseodymium, neodymium, samarium, europium, gadolinium, terbium, dysprosium, holmium, erbium, thulium, ytterbium, lutetium, or a combination thereof; "M" is barium, strontium, calcium, magnesium, mercury, or a combination thereof; "A" is copper, bismuth, titanium, tungsten, zirconium, tantalum, niobium, vanadium, or a combination thereof; "x" is from about 0.65 to about 0.80; "a" is 1; "b" is 1; and "y" is a value from about 2 to about 4 that provides the metal oxide complex with zero electrical resistance at a temperature of 70°K or above;

cooling said metal oxide complex to a temperature at or below that at which said metal oxide complex becomes superconductive; and

initiating a flow of electrical current within said metal oxide complex while maintaining said metal

C3 cont

oxide complex at or below the temperature at which it becomes superconductive.

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24. (Once Amended) The method of claim 20, wherein the oxide complex has the formula

$$LM_2A_3O_{6+\partial}$$

C4

and ∂ [has] is a number value from about 0.1 to about 4.5 that provides the oxide complex with zero electrical resistance at a temperature of 70°K or above.

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26. (Once Amended) The method of claim 25, wherein ∂ [has] is a number value from about 0.1 to about 1.0 that provides the oxide complex with zero electrical resistance at a temperature of 70°K or above.

C5

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29. (Once Amended) A method for conducting an electrical current within a conductor material without electrical resistive losses, comprising the steps of:

utilizing as the conductor material a metal oxide complex of the formula

$$[L_{1-x}M_x]_aA_bO_y$$

wherein "L" is yttrium, lanthanum, lutetium, or a combination thereof; "M" is barium, strontium, calcium, magnesium, or a combination thereof; "A" is copper, bismuth, titanium, tungsten, zirconium, tantalum, niobium, vanadium or a combination thereof; "x" is from about 0.01 to about 0.03; "a" is 1 to 2; "b" is 1; and "y" is a value from about 2 to about 4 that provides the metal oxide complex with zero electrical resistance at a temperature of 40°K or above;

C6 cont

cooling said metal oxide complex to a temperature at or below that at which said metal oxide complex becomes superconductive; and

C6 cont.

initiating a flow of electrical current within said metal oxide complex while maintaining said metal oxide complex at or below the temperature at which it becomes superconductive.

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35. (Once Amended) A composition which is superconducting at or above 40°K, comprising:

a sintered metal oxide complex of the formula

$$[L_{1-x}M_x]_aA_bO_y$$

wherein "L" is lanthanum, yttrium, lutetium or mixtures thereof; "M" is barium, strontium, calcium, magnesium or mixtures thererof; "A" is copper, bismuth, tungsten, zirconium, tantalum, niobium, vanadium or mixtures thereof; "x" is a number in the range of about 0.075 to about 0.5; "a" is a number in the range of 1 and 2; "b" is 1; and "y" is a value from about 2 to about 4 that provides the metal oxide complex with zero electrical resistance at a temperature of 40°K or above; and

C7

wherein the interatomic distances between the elements of said metal oxide complex are reduced compared to the interatomic distances between the elements of an oxide complex under atmospheric pressure satisfying the formula

$$[La_{1-x}Ba_x]_aCuO_y.$$

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47. (Once Amended) A composition which is superconductive at a temperature of 40°K and higher, comprising:

a sintered metal oxide complex of the formula

$$[L_{1-x}M_x]_aA_bO_y$$

wherein;

C8 cont

"L" is yttrium, lanthanum, cerium, praseodymium, neodymium, samarium, europium, gadolinium, terbium, dysprosium, holmium, erbium, thulium, ytterbium, or lutetium, or a combination thereof; "M" is barium, strontium, calcium, magnesium, mercury, or a combination thereof provided that when "L" is lanthanum "M" is not barium; "A" is copper, bismuth, tungsten, tantalum, niobium, vanadium; "x" is from about 0.01 to 1.0; "a" is 1 to 2; "b" is 1; and "y" is has a value from about 2 to about 4 that provides the metal oxide complx with zero electrical resistance at a temperature of 40°K or above.

C8 cont

56. (Once Amended) A composition which is superconductive at a temperature of 70°K and higher, comprising:

a sintered metal oxide complex of the formula

$[L_{1-x}M_x]_aA_bO_y$

wherein;

"L" is scandium, yttrium, lanthanum, cerium, praseodymium, neodymium, samarium, europium, gadolinium, terbium, dyprosium, holmium, erbium, thulium, ytterbium, [or] lutetium, or [a combination] mixtures thereof; "M" is barium, strontium, calcium, magnesium, mercury, or [a combination] mixtures thereof; "A" is copper, bismuth, tungsten, zirconium, tantalum, niobium, vanadium; "x" is from about 0.65 to 0.80; "a" is 1; "b" is 1; and "y" is a value from about 2 to about 4 that provides the metal oxide complex with zero electrical resistance at a temperature of 70°K or above.

C9

61. (Once Amended) The superconducting composition of claim 56, wherein the oxide complex has the formula

C10 cont

C10 cont.

$LM_2A_3O_{6+\partial}$

and ∂ [has] is a number value from about 0.1 to about 4.5 that provides the oxide complex with zero electrical resistance at a temperature of 70°K or above.

C11

63. (Once Amended) The superconducting composition of claim 62, wherein ∂ [has] is a number value from about 0.1 to about 1.0 that provides the oxide complex with zero electrical resistance at a temperature of 70°K or above.

65. (Once Amended) The superconducting composition of claim 64, wherein "L" is yttrium, lanthanum neodymium, [somarium] samarium, europium, gadolinium, erbium or lutetium and "M" is barium.

66. (Once Amended) A superconducting metal oxide complex having the formula $(L_{1-x}M_x)_aA_bO_y$, wherein "L" is lanthanum, lutetium, yttrium or a combination thereof; "M" is barium, strontium, calcium, magnesium or a combination thereof provided that when "L" is lanthanum "M" is not barium; "A" is copper bismuth, tungsten, zirconium, tantalum, niobium, vanadium or a combination thereof; "a" is 1 to 2; "b" is 1; "x" is about 0.01 to about 0.5; and "y" is a value from about 2 to about 4 that provides the oxide complex with zero electrical resistance at a temperature of 40°K or above; said complex made by a process comprising the steps of:

C12 cont

heating a mixture of solid compounds containing L, M, A and O in proportions appropriate to yield said formula to a temperature of 640-800°C in an oxygen atmosphere and for a time sufficient to react the mixture in the solid state and then heating the mixture at

900-1100°C for a period of at least about 12 hours subsequent to said reaction;

C12 cont

pelletizing the mixture; and

sintering the pellets.

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78. (Once Amended) A superconducting metal oxide complex having the formula $(L_{1-x}M_x)_aA_bO_y$, wherein "L" is lanthanum, lutetium, yttrium, scandium or a combination thereof; "M" is barium, strontium, calcium, magnesium, mercury or a combination thereof; "A" is copper, bismuth, titanium, tungsten, zirconium, tantalum, niobium, vanadium or a combination thereof; "a" is 1 to 2; "b" is 1; "x" is about 0.01 to about 0.5; and "y" is a value from about 2 to about 4 that provides the oxide complex with zero electrical resistance at a temperature of 40°K or above; said complex made by a process comprising the steps of:

mixing solid compounds containing L, M, A and O in amounts appropriate to yield said formula;

compacting the mixture into a solid mass by application of pressure from about 100 to about 30,000 psi;

C13

heating the solid mass in air to a temperature of from about 900 to about 1100 °C for at least about 5 minutes; and

quenching the solid mass to ambient temperature in air.

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82. (Once Amended) A superconducting metal oxide complex having the formula $(L_{1-x}M_x)_aA_bO_y$, wherein "L" is scandium, yttrium, lanthanum, cerium, praseodymium, neodymium, samarium, eruopium, gadolinium, terbium, dyprosium, holmium, erbium, thulium, ytterbium, or

C14 cont

lutetium, or a combination thereof; "M" is barium, strontium, calcium, magnesium, mercury, or a combination thereof; "A" is copper bismuth, titanium, tungsten, zirconium, tantalum, niobium, vanadium or a combination thereof; "a" is 1 to 2; "b" is 1; "x" is from about 0.01 to 1.0; and "y" is a value from about 2 to about 4 that provides the oxide complex with zero electrical resistance at a temperature of 40°K or above; said complex made by a process comprising the steps of:

compressing a mixture of solid powdered compounds containing L, M, A and O in proportions appropriate to yield said formula;

C14 Cont.

heating the compressed powder mixture to a temperature of from about 800°C to about 1000°C for a time sufficient to react the compressed mixture in the solid state; and

quenching said reacted compressed mixture to ambient temperature.

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88. (Once Amended) A method for making a superconducting metal oxide complex, comprising the steps of:

mixing solid compounds containing L, M, A and O in amounts appropriate to yield the formula $(L_{1-x}M_x)_aA_bO_y$, wherein "L" is scandium, yttrium, lanthanum, cerium, praseodymium, neodymium, samarium, europium, gadolinium, terbium, dysprosium, halmium, erbium, thulium, ytterbium, lutetium, or a combination thereof; "M" is barium, strontium, calcium, magnesium, mercury or a combination thereof; "A" is copper, bismuth, titanium, tungsten, zirconium, tantalum, niobium, vanadium or a combination

C15 cont